WHAT IS CLAIMED IS:

1. A design method with which to design a control system that controls an object to be controlled, the design method comprising:

providing a control system model having a continuously variable parameter for the control system;

providing at least one evaluation function that evaluates capability of the control system and where a unimodal is not guaranteed when the continuously variable parameter varies; and

obtaining a value of the continuously variable parameter at which the evaluation function takes on an optimal value.

2. The design method with which to design a control system according to claim 1, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter is obtained by using a genetic algorithm.

3. The design method with which to design a control system according to claim 1, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage.

4. A design method with which to design a control system that controls an object to be controlled, the

design method comprising:

providing a control system model having a continuously variable parameter for the control system;

providing a plurality of evaluation functions that evaluate capability of the control system and that vary independently of each other when the continuously variable parameter varies; and

obtaining a value of the continuously variable parameter at which the plurality of evaluation functions take on respective optimal values simultaneously.

5. The design method with which to design a control system according to claim 4, wherein in at least one of the plurality of evaluation functions a unimodal is not guaranteed when the continuously variable parameter varies.

6. The design method with which to design a control system according to claim 4, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter is obtained by using a genetic algorithm.

7. The design method with which to design a control system according to claim 6, wherein the control system model has a plurality of continuously variable parameters, and in obtaining values of the plurality of continuously variable parameters, a plurality of Pareto optimal

solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

8. The design method with which to design a control system according to claim 4, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage.

9. A control system designed by using the design method according to claim 1.

10. A control system designed by using the design method according to claim 4.

11. An adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

providing at least one evaluation function that evaluates capability of the control system and where a unimodal is not guaranteed when the continuously variable parameter varies;

obtaining a value of the continuously variable parameter at which the evaluation function takes on an optimal value; and

setting the continuously variable parameter to the value obtained.

12. The adjustment method with which to adjust a control system according to claim 11, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter is obtained by using a genetic algorithm.

13. The adjustment method with which to adjust a control system according to claim 11, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage.

14. An adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

obtaining an optimal value on design of the continuously variable parameter, using the design method according to claim 1;

obtaining a value of the continuously variable parameter, within a given range including the optimal value on design of the continuously variable parameter, at which the evaluation function takes on an optimal value in controlling an object to be controlled via the control system; and

setting the continuously variable parameter to the

value obtained in the obtaining of a value of the continuously variable parameter.

15. The adjustment method with which to adjust a control system according to claim 14, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter of the control system is obtained by using a genetic algorithm.

16. The adjustment method with which to adjust a control system according to claim 14, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage.

17. An adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

providing a plurality of evaluation functions that evaluate capability of the control system and that vary independently of each other when the continuously variable parameter varies;

obtaining a value of the continuously variable parameter at which the plurality of evaluation functions take on respective optimal values simultaneously; and

setting the continuously variable parameter to the

value obtained.

18. The adjustment method with which to adjust a control system according to claim 17, wherein in at least one of the plurality of evaluation functions a unimodal is not guaranteed when the continuously variable parameter varies.

19. The adjustment method with which to adjust a control system according to claim 17, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter is obtained by using a genetic algorithm.

20. The adjustment method with which to adjust a control system according to claim 19, wherein the control system has a plurality of continuously variable parameters, and in the obtaining of values of the plurality of continuously variable parameters, a plurality of Pareto optimal solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

21. The adjustment method with which to adjust a control system according to claim 17, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that

drives and controls the stage.

22. An adjustment method with which to adjust a control system that controls an object to be controlled and that has a continuously variable parameter, the adjustment method comprising:

obtaining an optimal value on design of the continuously variable parameter, using the design method according to claim 4;

obtaining a value of the continuously variable parameter, within a given range including the optimal value on design of the continuously variable parameter, at which the plurality of evaluation functions simultaneously take on respective optimal values in controlling an object to be controlled via the control system; and

setting the continuously variable parameter to the value obtained in the obtaining of a value of the continuously variable parameter.

23. The adjustment method with which to adjust a control system according to claim 22, wherein in the obtaining of a value of the continuously variable parameter, an optimal solution of the continuously variable parameter is obtained by using a genetic algorithm.

24. The adjustment method with which to adjust a

control system according to claim 23, wherein the control system has a plurality of continuously variable parameters, and in the obtaining of values of the plurality of continuously variable parameters, a plurality of Pareto optimal solutions of a group of the plurality of continuously variable parameters are obtained simultaneously.

25. The adjustment method with which to adjust a control system according to claim 22, wherein the object to be controlled is a stage on which a body is mounted, and the control system is a stage control system that drives and controls the stage.

26. An exposure method comprising:

providing the control system according to claim 9 serving as a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted; and

radiating an exposure beam while controlling the stage via the stage control system.

27. The exposure method according to claim 26, wherein the body is a substrate that is exposed to the exposure beam.

28. An exposure method comprising:

providing the control system according to claim 10

serving as a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted; and

radiating an exposure beam while controlling the stage via the stage control system.

29. The exposure method according to claim 28, wherein the body is a substrate that is exposed to the exposure beam.

30. An exposure method comprising:

adjusting a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted, by using the adjustment method according to claim 13; and

radiating an exposure beam while controlling the stage via the stage control system adjusted in the adjusting.

31. The exposure method according to claim 30, wherein the body is a substrate that is exposed to the exposure beam.

32. An exposure method comprising:

adjusting a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted, by using the adjustment method according to claim 16; and

radiating an exposure beam while controlling the stage via the stage control system adjusted in the adjusting.

33. The exposure method according to claim 32, wherein the body is a substrate that is exposed to the exposure beam.

34. An exposure method comprising:

adjusting a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted, by using the adjustment method according to claim 21; and

radiating an exposure beam while controlling the stage via the stage control system adjusted in the adjusting.

35. The exposure method according to claim 34, wherein the body is a substrate that is exposed to the exposure beam.

36. An exposure method comprising:

adjusting a stage control system that controls movement of a stage on which a body to be positioned in a path of an exposure beam is mounted, by using the adjustment method according to claim 25; and

radiating an exposure beam while controlling the stage via the stage control system adjusted in the

adjusting.

37. The exposure method according to claim 36, wherein the body is a substrate that is exposed to the exposure beam.

38. An exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam; and

the control system according to claim 9 that drives and controls a stage on which the substrate is mounted.

39. An exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam; and

the control system according to claim 10 that drives and controls a stage on which the substrate is mounted.

40. An exposure apparatus that transfers a predetermined pattern onto a substrate by illuminating the substrate with an exposure beam, the exposure apparatus comprising:

a beam source that generates the exposure beam; and

a stage control system that can be adjusted using the adjustment method according to claim 21, and drives and controls a stage on which the substrate is mounted.